

Amateur fossil hunting a fresh-air sport

By Richard D. Smith

It was just a fish that spent its entire life off the coast of New Jersey. It swam, fed, bred and died namelessly.

But, it became special when a chunk of rock containing its fossilized skull washed up on a section of Point Pleasant beach, and Ken Bliss, then a six-year-old with a rock and shell collection, walked by and picked it up.

"It was only the top and a little of the nose sticking out," Mr. Bliss recalled during a recent visit to the Rutgers University Geology Museum.

It was a dozen years later, and the Linden resident was seeing the entire fossil for the first time, freed from encrusting matrix. Since that day on the beach, it had looked special enough to be spared the usual fate of childhood vacation collectibles and be thrown out.

Mr. Bliss's grandmother recently brought it to museum curator William Selden for identification. Mr. Selden has since been coordinating the examination of what may be an important find.

Each year, many fossils are located by amateurs paleogeologists and paleontologists (students of ancient geology and ancient life forms). A casual discovery during a hike or other outdoor trip may inspire a collector to become a highly educated specialist.

"Some amateurs are amateurs only in that they don't get paid," Mr. Selden noted. "Some are quite sophisticated. These enthusiastic and curious people go out and scour the hills for us."

"There are not that many professionals paleontologists working in New Jersey," added Donald Baird, curator of Princeton University's Natural History Museum. "90 per cent of the significant finds in the New Jersey area are made by amateurs."

"Professionals may have to take on the higher questions of evolution or specimen classification," said Dave Parris, science bureau curator at the New Jersey State Museum in Trenton.

"But, amateurs do a lot of the impor-

tant routine work such as site inspection. Their contribution is considerably more honored in paleontology than it is in other sciences."

What might Ken Bliss have contributed? Preliminary examinations link the fossil quite closely with today's sea robin, genus *Prionotus*, and date it to the early Eocene period, 55 million years ago.

If this is correct, the common sea robin is actually a living fossil.

Scientists who have seen the skull stress that any final judgments must await further examination and the publication of a notice of occurrence to alert other specialists to the fossil's existence.

Should it prove to be unique, a new species may be erected within *Prionotus* with this fossil considered the type specimen.

Mr. Selden questioned Ken Bliss closely about exactly where it was found.

"Fossils are where you find them," he explained, adding that new specimens may mean the discovery of previously unknown deposits. "If you find one, you know conditions were right in that area for the fossilization of others."

Amateur collectors have played a vital role in the history of paleontology.

For example, in 1858, amateur scientist William Parker Foulke informed Prof. Joseph Leidy that fossil bones had been discovered in a marl pit in Haddonfield, Camden County.

Mr. Foulke oversaw an excavation that yielded the first complete dinosaur skeleton found in North America. In his honor, Prof. Leidy named the animal *Hadrosaurus foulkii*.

Thomas Jefferson, an accomplished amateur scientist, also worked in paleontology. He unearthed the claws of a giant sloth now known as *Megalonyx jeffersoni*, "Jefferson's giant nail" (but, he misidentified the animal as an ancient giant lion).

During the late 19th to early 20th centuries — the heyday of "the bone rush" — professional scientists took full

charge of such work. But, today, paleontology may have come full circle.

"With funding cuts, the days of the big museum expeditions are pretty much over," said Ralph Johnson of the Monmouth Amateur Paleontologists' Society, a group that runs field trips and oversees a considerable fossil collection from its base in Long Branch. "The professionals need the amateurs now."

Mr. Johnson, a factory foreman, has become an authority on Cretaceous period mollusks. Professional scientists rely on his information.

"Most of us got our start as amateurs," said Bill Gallagher, now a registrar of the state museum science bureau. "We feel there is no need for the professionals to regard the amateur as nuisances or intruders."

Mr. Gallagher is a founding member and past president of the Delaware Valley Paleontological Society (DVPS).

The society arranges lectures, field trips and displays of members' collections and also has a scientific journal, *The Mosasaur*, in which educated amateurs may publish papers based on their finds and research.

Mr. Gallagher recently received a complimentary letter about the DVPS from a prominent paleontologist, Norman D. Newell of the American Museum of Natural History in New York.

Dr. Newell will be participating in a symposium on trends in paleobiology at the upcoming North American Paleontological Convention in Boulder, Colo. He plans to speak on how amateur groups can aid research.

Indeed, the Paleontological Society, a national scientific organization, yearly presents the Harrell L. Strimple Award for outstanding work by an amateur. The award is named for a fossil hobbyist who became a leading authority on crinoids, animals related to modern sea lilies and star fish.

"A lot of amateurs strive for discovering something new and having it named after them," said Sid Hostetter. "But, that's not my attitude. For me, it has to do with adventure."

Mr. Hostetter found a fossil snail shell at age six during a western trip with his parents. He remembers the moment well, the shell being the only sign of life on a desert hillside.

Today a teacher of earth science in a Pennsylvania junior high school, he also serves as organizer of the DVPS's field trips. A recent trek to Big Brook, Monmouth County, yielded Cretaceous period sharks' teeth.

The group even works the brook in winter.

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Finding fossils on your own

Fossils are not often found by digging afresh. Most are discovered by chance after some other process — pit mining, construction or natural erosion — begins to uncover them.

As a public service, the geology departments of local colleges, universities and natural history museums are usually happy to try to identify specimens. They will not appraise them for value, however, and usually will not purchase them.

The common fear that a collector will lose his/her find because institutions confiscate them is groundless. If it must be held for study you may ask for and expect a receipt. If it is significant, you will be invited to donate it.

If a specimen merits a formal scientific description and classification, most scientists credit its discoverer in what they write. Many

important new fossils have been named after a chance collector.

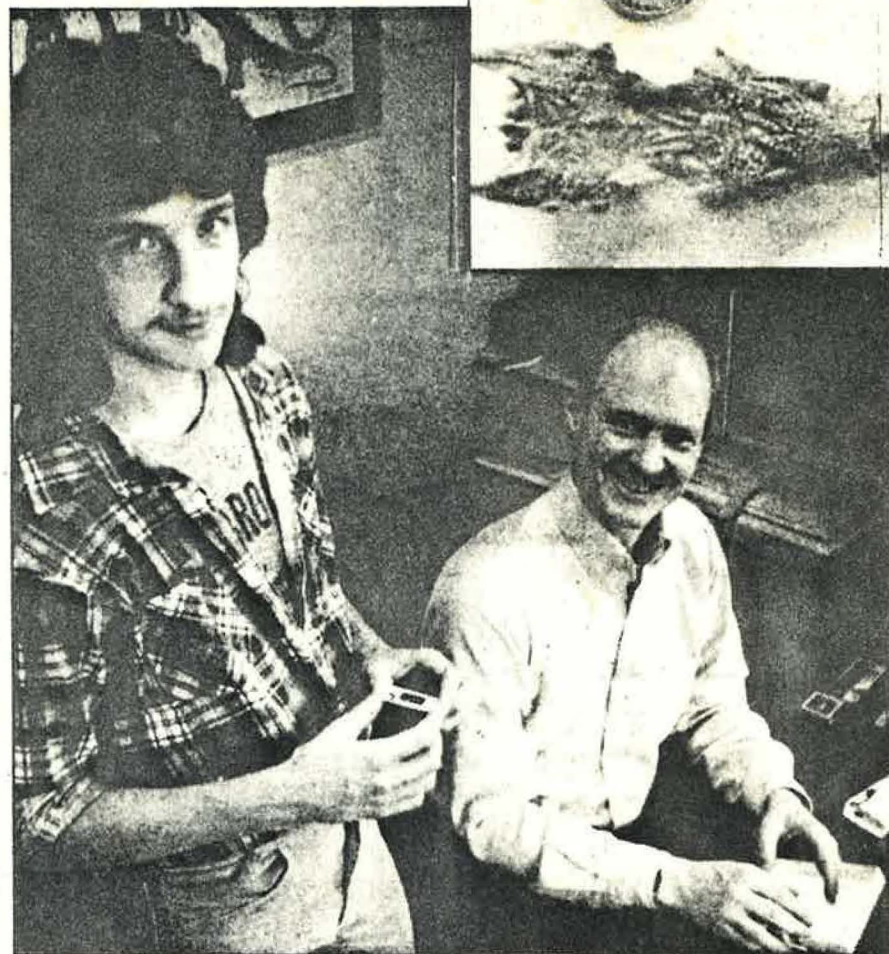
What should you do if you find what appears to be a fossil?

As in archeology, the location of an artifact is crucial. It can indicate the fossil's age or, in the case of ancient animals, help tell how the animal was constructed.

If, for example, you find what looks like a bone and there appear to be others, leave the rest of them where they lay unless they are in immediate danger of being destroyed.

Make careful notation of just where you found the fossil. Not simply in Such-and-Such Town, but measured (preferably on north-south and east-west axes) from the two most prominent landmarks in the vicinity to within a few

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(Richard D. Smith photos)

Ken Bliss (left) discovered a significant fossil while collecting shells and rocks on a Point Pleasant Beach. William Selden (seated), curator of the Rutgers Geology Museum, is coordinating its examination. The fossil skull (above the nickel) found by Mr. Bliss is compared with that of a modern sea robin fish (below the nickel). The nickel is a fitting coin to show scale, as Thomas Jefferson was an amateur paleontologist.

Fossils

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"My wife stopped going on that trip," Mr. Hostetter laughed. "But, we look for fossils together on vacations in Texas and Florida."

The DVPS's current president Earle E. Spamer got interested in geology simply because "I liked to climb and I started picking up rocks." He is now an authority on the geology of the Grand Canyon and published a major paper on the canyon's fossils in *The Mosasaur*.

Mr. Spamer said there are generally good relations between amateurs and professionals, but added that some academics consider amateurs to be backpacking rock hounds, "blue collar scientists."

There are other reasons for professional antagonism over anything that smacks of "a nice day outdoors looking for fossils."

Ralph Johnson recounted the case of Nutt Farm in western Monmouth County where busloads, literally, of unsophisticated fossil hunters picked a fossil-rich site clean in the 1950s and '60s.

The material dispersed among many finders, and the fossils were removed without their positions in the earth — the crucial indication of their age and significance — being recorded.

"I've run into collectors with incredible amounts of fossils, shelves and boxes full, and no information on

where they were found," Mr. Johnson said. "They say 'Look at all these fossils!' and I say, 'Well, yes, look at them....'"

Many specimens of the official state fossil, *Belemnite americana* an extinct relative of the modern squid, have been lost because they can be quickly dug out and sold as art objects.

Sites in the West have also been cleaned out because jewelry makers take the agate in which fossils are sometimes found.

"It's of primary importance for amateurs to come in contact with the right people, be pointed in the right direction, and be brought in contact with the literature," Mr. Johnson said.

"Then it's up to the individual whether fossils will become just a curio on the mantelpiece or part of a serious scientific collection."

Back at Rutgers, Ken Bliss said he wasn't planning to make paleogeology a hobby or a career even after finding the fossil fish skull.

Yet, he held it carefully in his hand, turning it over time and again, and said, "But I'll be looking every time I'm at the beach."

Richard D. Smith is a Packet Magazine staff writer who has been intrigued by paleontology ever since his kindergarten teacher gave him a magazine article on dinosaurs. □

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feet. Use a measurement from a permanent landmark, such as a sign or large rock outcropping, for reference.

If you have a camera, take pictures. Not only closeups of where you found the fossil, but others taken a way back to show the lay of the land.

In handling fossil material, exercise care. You may wish to wrap it in some soft material and carry it in a box. Large and/or fragile fossils will require professional handling.

If you decide to go fossil hunting, don't expect to find anything in the first 10 minutes nor in the first day. Fossilization is a comparatively rare occurrence. Complete fossils are preserved even more rarely and found

more rarely yet.

If you do find something, don't be disappointed if your "fossil" doesn't actually turn out to be one. Even professionals sometimes make initial misidentifications.

On the other hand, some important fossils have spent years as doorstops or paperweights before they were properly identified.

If you care to try your luck under experienced guidance, contact the Delaware Valley Paleontological Society, c/o Academy of Natural Sciences, 19th & Parkway, Philadelphia, Pa. 19103, or the Monmouth Amateur Paleontologists' Society, 57 Ocean Port Ave., West Long Branch, N.J. 07764 ☐

— R.D.S.